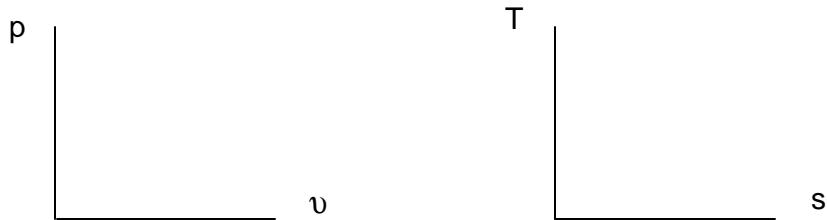


Ch 6 Example Problem: Diesel Cycle

An air standard Diesel cycle operates at a maximum temperature of 2740°F. Air enters this engine at 65°F and 15 psia. The compression ratio is 15:1.

Draw the p-v and T-s diagrams:



Complete the following table of properties:

	1	2	3	4
p [psia]				
T [°R]				
v [ft ³ /lb _m]				

ANS: $p_1 = 15$ $p_2 = 664.4$ $p_3 = 664.4$ $p_4 = 41.4$
 $T_1 = 525$ $T_2 = 1551$ $T_3 = 3200$ $T_4 = 1448$
 $v_1 = 12.955$ $v_2 = 0.864$ $v_3 = 1.783$ $v_4 = 12.955$

Calculate the net heat, q_{NET} [Btu/lb_m], of this cycle: (ANS: 238.0 Btu/lb_m)

Calculate the cycle thermal efficiency, η_{TH} [%]: (ANS: 60.1%)